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EXAMINER

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Please find below and/or attached an Office communication concerning this application or proceeding.

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/707,922
Filing Date: January 26, 2004
Appellant(s): BORREGO BEL ET AL.

Martin J. Sultana
BROOKS KUSHMAN P.C.
For Appellant

EXAMINER'S ANSWER

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This is in response to the appeal brief filed November 25, 2008 appealing from the Office action mailed July 9, 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,507,506	PINAS ET AL.	1-2003
6,340,848	MAEDA	1-2002

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5,625,546	SCHAAL	4-1997
6,344,985	AKERSON	2-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 16-21, 23-26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinas et al. (6,507,506), Maeda (6,340,848), and Schaal (5,625,546). Regarding independent claim 16, Pinas teaches a vehicle having first (B12) and second (B36) batteries at different voltage levels that supply power to the vehicle loads, where each network (14V and 42V networks) can feed the other via bi-directional DC-DC converter (20). (Fig. 2) Pinas fails to explicitly teach having first and second converters providing power to first and second loads and

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the method used to provide power to the loads. Maeda teaches a power distribution system in a vehicle comprising sets of 14V loads and 42V loads in different parts of the vehicle each connected to a distribution box (31, 33, 35) containing a DC/DC converter (31c, 33c, 35c) corresponding to each set of loads. (Fig. 2) Schaal teaches a variable allocation power distribution system comprising a plurality of (i.e. 1st, 2nd, and 3rd) converters (I) and a corresponding plurality of (i.e. 1st, 2nd, 3rd) loads (L). Schaal teaches the idea of the loads having an increased power level rating at times during operation that is greater than the amount of power that is capable of being provided by a single one of the converters. He also teaches a controller (7) coupled to each of the converters and loads that detects the amount of power that is consumed by each of the loads and selectively controls one of the converters to cooperate with another one of the converters to generate enough power to satisfy at least one of the increased power level ratings of one of the loads in response to detecting that the amount of power that is consumed by at least one of the loads is approaching one of the increased power level ratings. (Fig. 1; Col. 2, lines 11-28; Col. 3; and in particular Col. 3, lines 55-61) It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the arrangement of Maeda's distribution boxes and have a plurality of DC/DC converters assigned to particular sets of loads in different parts of Pinas' vehicle to minimize the amount of wires running through the system. It also would have been obvious to one of ordinary skill in the art at the time of the invention to implement Schaal's plurality of DC/DC converters in each of the distribution boxes and his method of supplying power to each load to be able to supply the exact right amount of power to each load at any given time and subsequently minimize power losses and in turn save money.

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Regarding claims 17-18, Schaal teaches that there could be any number of loads and any number of converters in his system all functioning the same way, depending upon the design choice of the user.

Regarding claims 19-21, Schaal teaches determining the amount of power being provided by each converter. Schaal also gives an example when each converter's maximum amount of generated power is less than its corresponding load's power rating level. Schaal also teaches that each converter's capabilities can and should be dependent upon its corresponding load's demands to minimize power losses. He fails to explicitly teach having the converter that is generating the lowest amount of power cooperate with another to satisfy an increased power level rating, nor does he explicitly teach the first and second converter's maximum amount of power being equal, however, it would have been obvious to one of ordinary skill in the art at the time of the invention to have all of the converters having the same maximum generated power and/or to have the converter that generates the lowest amount of power to cooperate with another converter to satisfy an increased power rating, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Also, the above Pinas/Maeda/Schaal combination is configured to do and capable of doing all that is claimed.

Regarding claims 23-26 and 28, the above combination and teachings from Pinas, Maeda, and Schaal read on these claims.

4. Claims 22 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinas et al. (6,507,506), Maeda (6,340,848), and Schaal (5,625,546) as applied to claims 16 and 23 above, and further in view of Akerson (6,344,985). Pinas, Maeda, and Schaal teaches a power

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distribution system for a vehicle as described above. They fail to explicitly teach the first, second, and third converters arranged throughout the system to be bi-directional. Akerson teaches a power distribution system that could be used in vehicles comprising the idea of having bi-directional converters throughout the system. (Fig. 7; Col. 1) It would have been obvious to one of ordinary skill in the art at the time of the invention to have all of the converters in the combination Pinas invention to be bi-directional so that power can be transferred in both directions, particularly because of the system functioning with two different voltage levels. Another reason to use bi-directional converters is because some loads may have rotational energy (i.e. motor/generators) that can be taken back into the system when the load is being turned off and that energy can be preserved and reused somewhere else in the system, and that in turn minimizes losses and saves money.

(10) Response to Argument

Regarding the Appellants arguments for claim 16, first to clarify, Schaal's invention teaches *the method* of distributing power from converters to various loads used in the Examiner's rejection. For example, Schaal teaches a first load (61) configured to operate at a first increased power level rating that is greater than the amount of power that is capable of being provided by a first converter (1), and a second load (71) configured to operate at a second increased power level rating that is greater than the amount of power that is capable of being provided by a second converter (2). Schaal also teaches a controller to selectively control the converters to generate enough power to satisfy at least one load's increased power level rating, when a load experiences an increased power level rating (i.e. increase load demands). (Fig. 1; Col. 2, lines 11-28; all of Col. 3, in particular lines 55-61) The Examiner acknowledges that Schaal's

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converters are not DC/DC converters. However, since Pinas (the main reference) teaches the system using DC/DC converters, as does the Maeda reference, Schaal just teaches the method used by Pinas' converters (i.e. DC/DC) to power Pinas' plurality of loads. Therefore, the combined invention teaches a plurality of DC/DC converters powering a plurality of loads via the method taught in Schaal. The benefit of using Schaal's method is to supply the exact right amount of power to each load at any given time and subsequently minimize power losses. To clarify, ***there are no inverters used in the final combined invention, only DC/DC converters taught in the main reference and the Maeda reference.*** No where in the rejection did the Examiner state that the combination would lead to inverters being implemented into Pinas' invention. The Examiner apologizes for any misinterpretation of the combination/rejection.

Regarding claims 17 and 18, Schaal's method teaches the idea of using any number of converters and any number of loads (design choice). The drawing in Fig. 1 is just one embodiment of Schaal's invention (using three converters and two loads). Therefore, Schaal DOES teach the idea of a third converter "for transferring power to the first and second loads and to a third load, wherein the third load is configured to operate at a third increased power level rating that is greater than the amount of power that is capable of being provided by a third converter." Schaal also teaches the method, as stated above, wherein a controller selectively controls the converters to cooperate with one another to generate enough power to satisfy at least one of the increased power level ratings.

Regarding claim 23, the Examiner's above responses can be used to respond to the Appellant's arguments regarding this claim.

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Regarding claims 19, 20, 24, 25, and 28, as stated above in the rejection, the cited prior art references do not explicitly teach the limitations of choosing the converter that is generating the lowest amount of power to cooperate with another converter to satisfy an increased power level rating, nor does he explicitly teach the first and second converter's maximum amount of power being equal, however, it would have been obvious to one of ordinary skill in the art at the time of the invention to have all of the converters having the same maximum generated power and/or to have the converter that generates the lowest amount of power to cooperate with another converter to satisfy an increased power level rating, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

For example, it would be obvious for all three converters to supply the same maximum amount of power, based on the prior art teachings and the above case law (claims 20 and 25). Subsequently, in choosing the converter generating the "lowest" amount, it would be a tie between all of them, and therefore using any two converters to cooperate with one another to satisfy an increased power level rating would read on claims 19, 24, and 28.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Dru Parries

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/Richard Elms/

Supervisory Patent Examiner, Art Unit 2824

2.11.09

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2/3/09